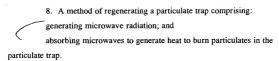
## CLAIMS

A particulate filter for an internal combustion engine comprising:

a microwave source generating microwaves;

microwave-absorbing materials to absorb said microwaves and 5 generate heat; and

- a particulate trap trapping particulates generated by the engine, said particulate trap heated by said microwave-absorbing materials to burn off said particulates.
- The particulate filter of Claim 1 wherein said microwaveabsorbing material is configured as an end plug.
- The particulate filter of Claim 1 wherein said microwaveabsorbing material is configured as axial bands distributed along channels of said particulate trap.
- The particulate filter of Claim 1 wherein said microwaveabsorbing material is deposited in substantially linear fashion along the length of the channels of said particulate trap.
- The particulate filter of Claim 1 wherein said microwaveabsorbing material is silicon carbide.
- The particulate filter of Claim 1 wherein said particulate trap is comprised of a microwave-transparent material.
- The particulate filter of Claim 6 wherein said microwavetransparent material is chordierite.



- 9. The method of Claim 8 further comprising the step of depositing microwave-absorbent material along walls of the particulate trap.
- 10. The method of Claim 8 further comprising the step of configuring microwave-absorbent material as end plugs in the particulate trap.
- 11. The method of Claim 8 further comprising the step of controlling the temperature of the particulate trap by controlling the microwave radiation.
- 12. A system for removing particulates in a particulate trap comprising:
  - a microwave power source;
  - a microwave antenna coupled to said power source for generating
- 5 microwaves;

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- a microwave wave guide operatively coupled to said microwave antenna to guide said microwaves; and
- microwave-absorbent material located in said particulate trap, wherein said microwaves are incident upon said microwave-absorbent material to generate heat to burn off particulates located in said particulate trap.

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- 13. The system of Claim 12 further comprising a diesel engine coupled to said particulate trap, wherein diesel exhaust propagates through said particulate trap.
- 14. A method of initiating regeneration in a particulate trap comprising the steps of:

locating microwave-absorbing material in the particulate trap in areas that particulates build up;

generating microwaves;

 $absorbing \ microwaves \ with \ the \ microwave-absorbing \ material;$  and

controlling the microwaves to initiate a burn-off of particulates.